

REMARKS

Applicants appreciate the Examiner's thorough consideration with respect to this application. Claims 1-11, 13-15, 20-22, 25-26, and 54-56 are pending. Claims 1 and 25 are independent. Claims 1-11, 13-15, 22, and 25-26 have been amended. Claims 12, 16-19, 23-24, and 27-53 have been canceled herewith. No new matter has been entered into the application by this Response. Applicants request reconsideration of the Examiner's rejections.

Claim Rejections Under 35 U.S.C. § 101

The Examiner rejected claims 1-56 under 35 U.S.C. § 101, alleging (1) the claims are not proper process claims, and (2) the claims are directed to abstract ideas. Applicants have amended independent claim 1 to recite that the flow simulation is performed on a computer, that the variability between effective reservoir property values is calculated on a computer, and that the reservoir model is outputted. Applicants have further amended claim 1 to recite that the reservoir model is a hydrocarbon reservoir model. These amendments identify the apparatus that accomplishes the method steps, and states a practical application of the method. Independent claim 25 has been similarly amended. For these reasons, applicants request the Examiner withdraw the rejections under section 101.

Claim Rejections Under 35 U.S.C. § 112

The Examiner rejected claims 1-56 under 35 U.S.C. § 112, first and second paragraphs, asserting the claims do not satisfy the enablement requirement and are incomplete. Applicants have amended the claims to (a) eliminate claims having mutually exclusive steps, and (b) explain how the two frameworks are related to each other by reciting, in claim 1 for example, that the cell framework comprises two or more cells of the reservoir framework. Applicants request the Examiner to withdraw the rejection under Section 112, first and second paragraphs.

Claim Rejections Under 35 U.S.C. § 103

The Examiner rejected claims 1-56 under 35 U.S.C. § 103(a) as being unpatentable over Sabathier, et al. Applicants have canceled claims 12, 16-19, 23-24, and 27-53 herewith, thereby rendering moot the Examiner's rejection thereto. With respect to the remaining claims, applicants traverse this rejection.

Sabathier discloses a method of modeling fractured reservoirs. The method creates a global model consisting of a two-dimensional map of a reservoir. Average fracture properties are assigned to each cell of the model. A local model is a three-dimensional model of a fracture network at a given location pointed in the global model.

In contrast, applicants' claimed invention goes much further than merely defining a global model and a local model. Applicants have invented a method for generating a model of a hydrocarbon reservoir in which a first framework having a plurality of three-dimensional cells is provided, and a cell framework is built that comprises two or more cells of the reservoir framework. Cells of the cell framework are populated with reservoir property values to generate a three-dimensional cell model. The hydrocarbon reservoir model is generated by: performing, on a computer, a flow simulation on the cell model to generate one or more effective reservoir property values for the reservoir framework; calculating, on a computer, the variability between the reservoir values for the reservoir framework; determining whether the rate of change in the variability between the effective reservoir property values remains substantially the same; and populating the reservoir framework with the effective reservoir property values. None of these steps are disclosed or suggested by Sabathier. Furthermore, the large (global) model is a two-dimensional model populated with average fracture properties, while applicants' hydrocarbon reservoir model is a three-dimensional reservoir framework populated with effective reservoir property values generated from a flow simulation on the cell model, as recited in applicants' independent claim 1. Because Sabathier neither discloses nor suggests the recitations as explained herein, claim 1 is allowable. Claims 2-11, 13-15, 20-22, 26, and 54-56 depend directly or indirectly from allowable claim 1 and are allowable for at least the same reasons claim 1 is allowable.

Claim 25 has been amended to include the recitations of claim 1, and is now presented in independent form. Claim 25 is allowable for at least the same reasons claim 1 is allowable. Furthermore, claim 25 recites additional limitations of “extracting other cell samples from the cell model when a user-specified number of cell samples has not been sampled, and performing on a computer a flow simulation on said other cell samples, and further calculating the variability in effective reservoir property values generated from said other cell samples; and selecting another net-to-gross value from the set of estimated net-to-gross values when a user-specified number of cell samples has been sampled.” These limitations are neither disclosed nor suggested in Sabathier. Claim 25 is therefore allowable for this additional reason.

CONCLUSION

Applicants do not acquiesce to the Examiner’s positions in the Office Action of April 1, 2009, but have responded herein to the Office Action to advance prosecution. The absence of an explicit response by Applicants to any of the Examiner’s positions does not constitute a concession of the Examiner’s positions. The fact that Applicants’ comments have focused on particular arguments does not constitute a concession that there are not other arguments for patentability of the claims. All of the dependent claims are patentable for at least the reasons given with respect to the claims on which they depend.

Applicants have made a diligent effort to place the claims in condition for allowance. However, should there remain unresolved issues that require action, it is respectfully requested that the Examiner contact the undersigned via telephone at (713) 431-4569 so that such issues may be resolved as expeditiously as possible. For the reasons contained herein, this application should now be considered to be in condition for allowance and such action is earnestly solicited.

Respectfully submitted,

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